WHAT IS CLAIMED IS:

1. A high-frequency multilayer circuit substrate comprising:

a plurality of circuit layers;

a via hole penetrating the plurality of circuit layers to be connected to each other;

a plane impedance matching circuit connected to the via hole; and

a signal transmission line connected to the plane impedance matching circuit, wherein

a characteristic impedance of a via hole connecting portion formed by the via hole and the plane impedance matching circuit is matched to a characteristic impedance of the signal transmission line.

2. A high-frequency multilayer circuit substrate as set forth in claim 1, wherein

the plane impedance matching circuit is formed by an impedance matching transmission line, one end of which is connected to the via hole and other end of which is connected to the signal transmission line.

3. A high-frequency multilayer circuit substrate as set forth in claim 2, wherein

the characteristic impedance of the via hole connecting portion is matched to the characteristic impedance of the signal transmission line by adjusting a

width and a length of the impedance matching transmission line.

4. A high-frequency multilayer circuit substrate as set forth in claim 2, wherein

the plane impedance matching circuit is formed by the impedance matching transmission line and stubs which are connected to both sides of the impedance matching transmission line at the other end thereof.

5. A high-frequency multilayer circuit substrate as set forth in claim 4, wherein

the characteristic impedance of the via hole connecting portion is matched to the characteristic impedance of the signal transmission line by adjusting the width and the length of the impedance matching transmission line and a width and a length of each of the stubs.

6. A high-frequency multilayer circuit substrate as set forth in claim 2, wherein

the plane impedance matching circuit is formed by a plurality of impedance matching transmission lines having at least two different widths and connected in series to the via hole and the signal transmission line.

7. A high-frequency multilayer circuit substrate as set forth in claim 6, wherein

the characteristic impedance of the via hole connecting portion is matched to the characteristic

impedance of the signal transmission line by adjusting widths and lengths of the impedance matching transmission lines.